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TO: Health Care Providers

FROM: Alfred DeMaria, Jr., MD
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RE: Chikungunya virus information for healthcare providers

Background

Chikungunya is a mosquito-borne viral disease characterized by acute onset of fever and severe polyarthralgia that often occurs as large outbreaks with high attack rates when there is an abundance of competent mosquito vectors. Outbreaks have occurred in countries in Africa, Asia, Europe, and on islands in the Indian and Pacific Oceans. In late 2013, first local transmission in the Americas was reported on islands in the Caribbean and imported cases are being identified with increasing frequency in Massachusetts. Information about areas affected by the current outbreak can be found at <http://wwwnc.cdc.gov/travel/notices/watch/chikungunya-saint-martin>.

Ecology of the virus

- Unlike West Nile virus (WNV) and eastern equine encephalitis (EEE) virus, chikungunya is not a virus with a bird reservoir. Humans are the primary host of chikungunya; non-human primates may play a role in harboring the virus outside of epidemics in some places.
- *Aedes aegypti* and *Aedes albopictus* (the tiger mosquito) are the primary mosquito vectors. *A. aegypti* is not found in Massachusetts, although *A. albopictus* can occasionally be found here. Both are aggressive daytime biting mosquitoes, in contrast to the species that spread WNV and EEE locally.
- Although *A. albopictus* can occasionally be found in Massachusetts, at this time it is extremely unlikely that someone would become infected with chikungunya here.

Clinical disease

- The majority of infected people become symptomatic 3–7 days (range 1–12 days) after being bitten by an infected mosquito.
- Acute onset of fever and polyarthralgia (often in the hands and feet) are the primary clinical findings. The pain can be severe and debilitating. Other symptoms include headache, myalgia, arthritis, conjunctivitis, nausea/vomiting, and a maculopapular rash.
- Lymphopenia, thrombocytopenia, elevated creatinine, and elevated hepatic transaminases are the most common clinical laboratory findings.
- Acute symptoms typically resolve within 7–10 days although some patients might have relapse of rheumatologic symptoms (e.g., polyarthralgia, polyarthritis, tenosynovitis) in the months following acute illness.
- Rare complications include uveitis, retinitis, myocarditis, hepatitis, nephritis, bullous skin lesions, hemorrhage, meningoencephalitis, myelitis, Guillain-Barré syndrome, and cranial nerve palsies.
- Persons at risk for severe disease include neonates exposed intrapartum, older adults (e.g., > 65 years), and persons with underlying medical conditions.

Laboratory testing

Chikungunya testing is available at the Centers for Disease Control and Prevention (CDC) and from one commercial laboratory (Focus Diagnostics).

- **Available tests are performed on serum or plasma:**
 - Viral culture to detect virus in first 3 days of illness; or
 - RT-PCR to detect viral RNA in first 8 days of illness; or
 - Serology to detect IgM, IgG, and neutralizing antibodies that develop toward the end of the first week of illness (≥ 4 days post illness onset).
- If distinguishing between chikungunya and dengue infection is important for clinical reasons, it may be more expedient to use the commercially available test.
- Specimens from patients with a clinically compatible illness but without recent travel to an area known to have circulating chikungunya virus should be tested at CDC.
- Please call the Epidemiology Program of the Massachusetts Department of Public Health at 617-983-6800 for more information or to facilitate testing.

Treatment and clinical management

There is no specific antiviral therapy; treatment is symptomatic and supportive. Acetaminophen is recommended for initial fever and pain control, especially if the patient was traveling in an area that also has circulating dengue virus.

- If the patient may have dengue, do not use aspirin or other NSAIDs (e.g., ibuprofen, naproxen, toradol) until they have been afebrile ≥ 48 hours and have no warning signs for severe dengue (severe abdominal pain, persistent vomiting, mucosal bleeding, pleural effusion or ascites, lethargy, enlarged liver, and increased hematocrit with

decrease in platelet count). Aspirin and other NSAIDs can increase the risk of hemorrhage in patients with dengue.

If chikungunya has been confirmed, persistent joint pain may benefit from use of NSAIDs, corticosteroids, or physiotherapy.

Differentiating dengue and chikungunya

- Chikungunya virus is more likely to cause high fever, severe polyarthralgia, arthritis, rash, and lymphopenia.
- Dengue virus infection is more likely to cause neutropenia, thrombocytopenia, hemorrhage, shock, and death.
- Consider managing patients with suspected chikungunya as dengue until dengue has been ruled out
 - Proper clinical management of dengue reduces the risk of medical complications and death
 - Aspirin and other NSAIDs can increase the risk of hemorrhage in patients with dengue

Prevention and control

There is no vaccine or medication available to prevent chikungunya virus infection or disease. Travelers to areas with ongoing chikungunya outbreaks should be encouraged to reduce mosquito exposure by:

- Use air conditioning or window/door screens
- Use mosquito repellents on exposed skin
- Wear long-sleeved shirts and long pants
- Wear permethrin-treated clothing
- Empty standing water from outdoor containers

People at increased risk for severe disease should consider not traveling to areas with ongoing chikungunya outbreaks.

People suspected to have chikungunya or dengue should be protected from further mosquito exposure during the first week of illness to reduce the risk of local transmission.

Reporting

Cases of chikungunya should be reported to the local health department of the town or city in which the patient resides.

Additional information is available at www.cdc.gov/chikungunya